Third Quarter 2005
Groundwater Monitoring Report

Former Fir Haven Shell
Miranda, California
Case No. 12748

Prepared for:

Mr. Eugene Sky

Consulting Engineers & Geologists, Inc.

812 W. Wabash Avenue
Eureka, CA 95501-2138
707/441-8855

September 2005

001032

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Reference: 001032

September 20, 2005

Mr. Mark Verhey
Humboldt County Division of Environmental Health
100 H Street, Suite 100
Eureka, CA 95501

Subject: Groundwater Monitoring Report, Third Quarter 2005, Former Fir Haven Shell, Miranda, California; Case No. 12748

Dear Mr. Verhey:

This report presents the results of the groundwater monitoring for the third quarter 2005, at the Fir Haven Shell site.

If you have any questions, please call me at 707/441-8855.

Sincerely,

SHN Consulting Engineers & Geologists, Inc.

Frans B. Lowman, R.G.
Project Manager

SLD:med
Enclosure: Report

copy w/encl: Mr. Eugene Sky

Reference: 001032

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Groundwater Monitoring Report

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Miranda, California
Case No. 12748

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QA/QC:FBL___

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Acronyms and Abbreviations

<	denotes a value that is "less than" the method detection limit
mV	millivolts
ppm	parts per million
ug/g	micrograms per gram
ug/L	micrograms per Liter

BGS	Below Ground Surface
BTEX	Benzene, Toluene, Ethylbenzene, and total Xylenes
DCO_2	Dissolved Carbon Dioxide
DIPE	Diisopropyl Ether
DO	Dissolved Oxygen
EC	Electrical Conductivity
EPA	U.S. Environmental Protection Agency
ETBE	Ethyl Tertiary-Butyl Ether
HCDEH	Humboldt County Division of Environmental Health
MTBE	Methyl Tertiary-Butyl Ether
MW-#	Monitoring Well-#
NA	Not Analyzed
ND	Not Detected
NS	Not Sampled
ORP	Oxidation-Reduction Potential
QA/QC	Quality Assurance/Quality Control
SHN	SHN Consulting Engineers & Geologists, Inc.
SP-#	Soil Sample-#
TAME	Tertiary-Amyl Methyl Ether
TBA	Tertiary-Butyl Alcohol
TPHG	Total Petroleum Hydrocarbons as Gasoline
UST	Underground Storage Tank
WP-#	Well Point-#

1.0 Introduction

This report presents the results of groundwater monitoring activities for the third quarter 2005, conducted at the former Fir Haven Shell (Case No. 12748). The site is located at 5251 Highway 254 in the community of Miranda, California (Figure 1). SHN Consulting Engineers & Geologists, Inc. (SHN) conducted groundwater monitoring on August 2, 2005, as requested by the Humboldt County Division of Environmental Health (HCDEH). A site plan of the subject property is included as Figure 2.

1.1 Organization of the Report

This report is presented in five sections. This section introduces the reader to the site. Section 2.0 discusses the scope of work completed at the site during the third quarter 2005, monitoring event. Section 3.0 presents the results of the groundwater monitoring program. Section 4.0 presents conclusions regarding the nature of the site, as well as recommendations for future activities. Section 5.0 presents a list of references cited.

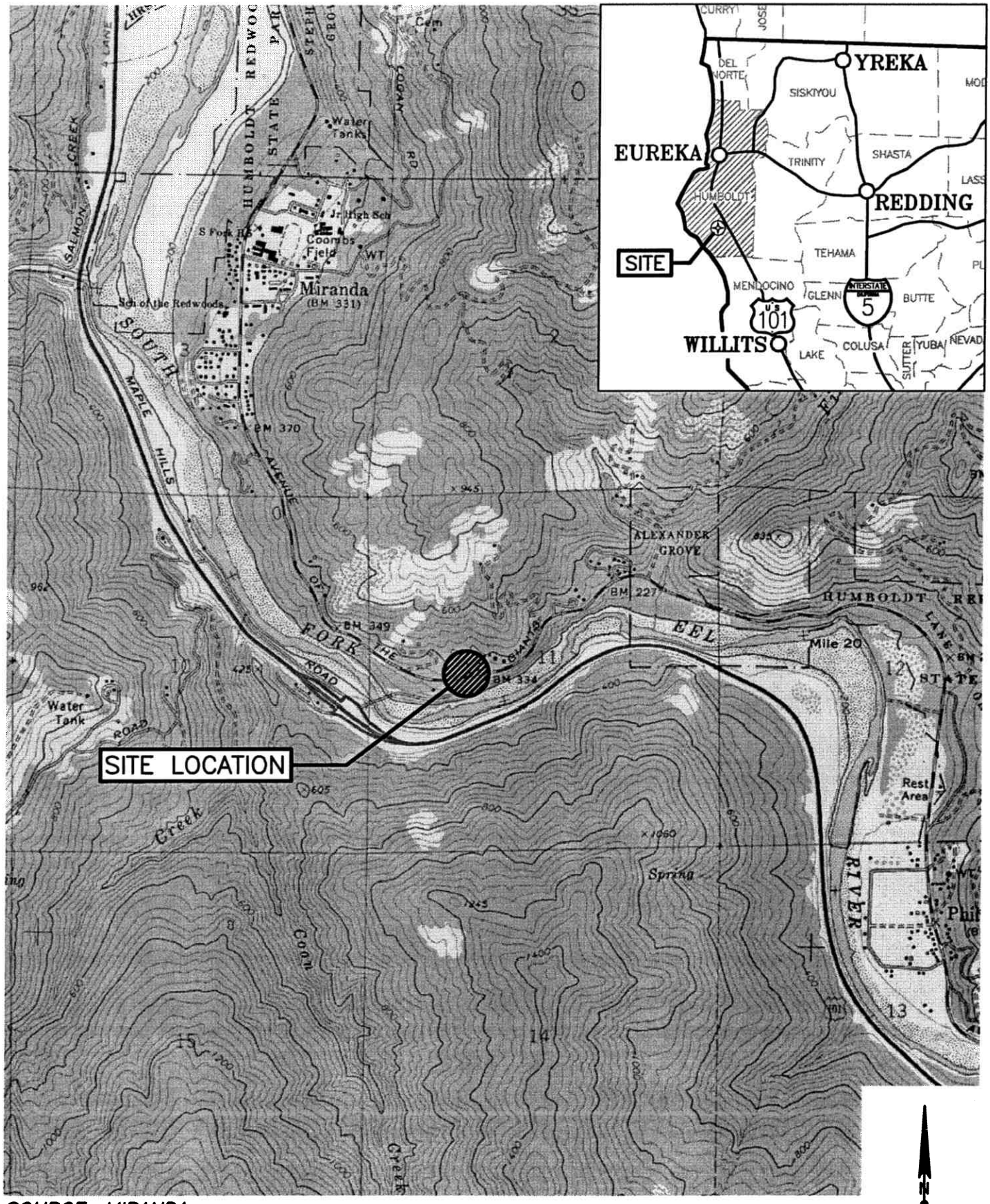
1.2 Background

The subject site is the location of a former Shell service station. On March 29, 2001, North Coast Environmental Construction abandoned two Underground Storage Tanks (USTs) previously used to store gasoline. Both USTs were abandoned in place because removal of either UST may have compromised the integrity of an existing building. Both USTs were abandoned under permit from the HCDEH, by cleaning, then tremie filling each UST with a grout mixture. Representatives from the HCDEH were present during the UST abandonment. The locations of the former tanks are shown on Figure 2.

During the UST abandonments, two soil samples were collected by SHN from beneath the location of each tank (soil samples SP-1, SP-2, SP-3, and SP-4) by cutting holes through the bottom of the tanks to access the soil beneath. All four of the soil samples were analyzed for Total Petroleum Hydrocarbons as Gasoline (TPHG); Benzene, Toluene, Ethylbenzene, and total Xylenes (BTEX); and Methyl Tertiary-Butyl Ether (MTBE). Additionally, soil sample SP-1 was analyzed for total lead, and the fuel oxygenates Diisopropyl Ether (DIPE), Ethyl Tertiary-Butyl Ether (ETBE), Tertiary-Amyl Methyl Ether (TAME), Tertiary-Butyl Alcohol (TBA), Methanol, and Ethanol.

TPHG was detected in all of the soil samples, at concentrations ranging from 760 micrograms per gram (ug/g), to 8,700 ug/g. Various components of BTEX were also present in each soil sample, including benzene at concentrations ranging from 0.77 ug/g to 5.4 ug/g. None of the fuel oxygenates, including MTBE, were detected in any of the soil samples submitted for analyses. Total lead was detected in soil sample SP-1 at a concentration of 41 ug/g. The historic soil analytical results are presented in Appendix A, Table A-1.

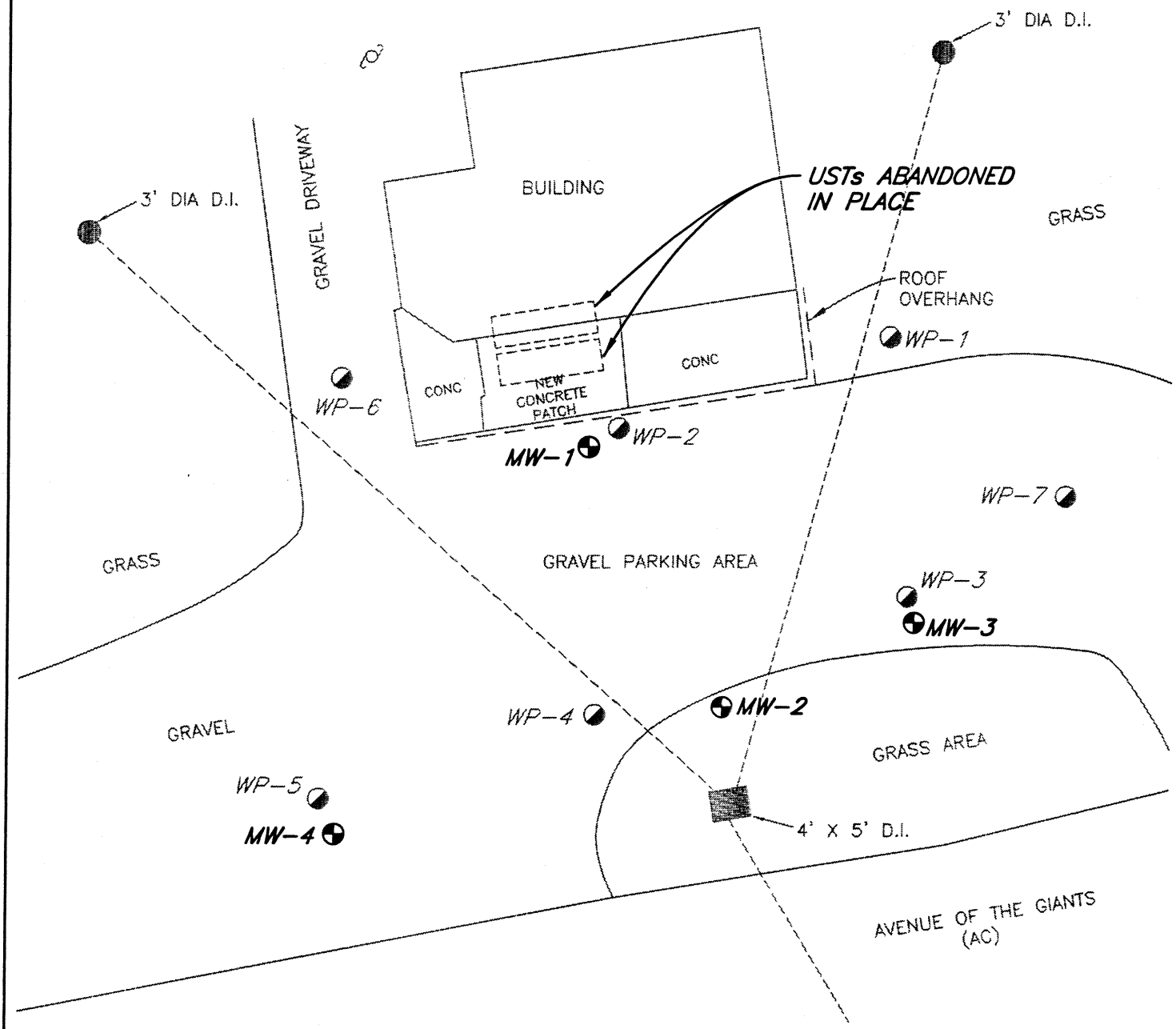
On July 19, 2001, SHN submitted a Site Investigation Work Plan to the HCDEH (SHN, July 2001). The proposed work plan was approved by the HCDEH on August 17, 2001.



SOURCE: MIRANDA USGS 7.5 MINUTE QUADRANGLE

1"=2000'±

SHN Consulting Engineers & Geologists, Inc.	Former Fir Haven Shell Miranda, California	Site Location Map SHN 001032	
	MAY 2005	001032-LOCATION	Figure 1



EXPLANATION

WP-1 BORING LOCATION AND DESIGNATION (SHN, NOVEMBER 2003)

MW-1 MONITORING WELL LOCATION AND DESIGNATION (SHN, NOVEMBER 2004)

NOTE: BORING LOCATIONS ARE APPROXIMATE

1"=20'

SHN Consulting Engineers & Geologists, Inc.	Former Fir Haven Shell Miranda, California	Site Plan SHN 001032	
	DECEMBER 2004	001032-SI1-DEC-04	Figure 2

On November 24, 2003, SHN supervised the drilling of seven exploratory soil borings (WP-1 through WP-7) at the Fir Haven Shell site (SHN, January 2004). The soil borings were drilled using a truck-mounted Geoprobe® rig operated by Fisch Environmental of Valley Springs, California. The soil borings were extended to a maximum depth of 28 feet Below Ground Surface (BGS). The exploratory soil boring locations are shown on Figure 2.

Soil samples were collected from each of the exploratory borings at various depths. Groundwater samples were also collected from two of the seven borings. Groundwater was not encountered in the remaining five borings. TPHG, BTEX constituents, and lead were detected in the soil samples, and TPHG and BTEX constituents were detected in groundwater samples (Appendix A, Tables A-1 and A-2).

In July 2004, SHN submitted a work plan for further investigative work, which was approved by the HCDEH on July 29, 2004.

On November 12 and 13, 2004, SHN supervised Mitchell Drilling of Eureka, California, in the installation of four additional exploratory soil borings (MW-1, MW-2, MW-3, and MW-4). The soil borings were extended to maximum depths ranging from 30 to 50 feet BGS. Due to a lack of water in borings MW-3 and MW-4, boring MW-2 was drilled to 50 feet BGS in order to assess the presence of groundwater and the depth to bedrock. The exploratory soil boring locations are shown on Figure 2. Soil samples collected from boring location MW-1 contained detectable concentrations of TPHG and BTEX components. BTEX components were also detected in the two soil samples collected from boring MW-4. The historic soil sample analytical data from the November 2004 site investigation are presented in Appendix A, Table A-1.

The four exploratory soil borings were subsequently converted into groundwater monitoring wells. On November 22, 2004, three of the existing groundwater monitoring wells were developed and sampled. Monitoring well MW-3 was dry at the time of the fieldwork, and as such, could not be developed or sampled. Wells MW-1, MW-2, and MW-4 were developed using surge and purge techniques. The groundwater samples collected from monitoring well MW-1 contained elevated concentrations of TPHG and BTEX. No detectable concentrations of any of these constituents were present in the groundwater samples collected from wells MW-2 or MW-4 (SHN, January 2005).

Groundwater beneath the Former Fir Haven Shell site is monitored on a quarterly basis, as requested by the HCDEH.

2.0 Field Activities

2.1 Monitoring Well Sampling

SHN completed the groundwater monitoring event on August 2, 2005. As part of the monitoring program, wells MW-1, MW-2, and MW-4 were purged and sampled. During purging activities, monitoring well MW-3 went dry, and as such, could not be sampled. Prior to commencing purging activities, all four monitoring wells were measured for depth to water and checked for the presence of floating product (none was observed). Electrical Conductivity (EC), pH, and temperature were

monitored periodically in wells MW-1, MW-2, and MW-4 during purging activities using portable instrumentation. All four monitoring wells were measured for Dissolved Oxygen (DO), Oxidation-Reduction Potential (ORP), and Dissolved Carbon Dioxide (DCO_2).

A groundwater sample was then collected from monitoring wells MW-1, MW-2, and MW-4 utilizing a disposable polyethylene bailer. The water samples were immediately placed in an ice-filled cooler, and submitted to the laboratory for analyses under appropriate chain-of-custody. Field notes and water sampling data sheets from the third quarter 2005, groundwater monitoring event are included in Appendix B.

2.2 Laboratory Analysis

Each groundwater sample was analyzed for the following:

- TPHG, in general accordance with U.S. Environmental Protection Agency (EPA) Method Nos. 5030/GCFID/8015B.
- BTEX and MTBE, in general accordance with EPA Method Nos. 5030/8021B.

North Coast Laboratories, Ltd., a State-certified analytical laboratory located in Arcata, California, conducted all analyses.

2.3 Equipment Decontamination Procedures

All monitoring and sampling equipment was cleaned prior to being transported to the former Fir Haven Shell site. All smaller equipment was initially washed in a water solution containing Liquinox® cleaner, followed by a distilled water rinse, then by a second distilled water rinse.

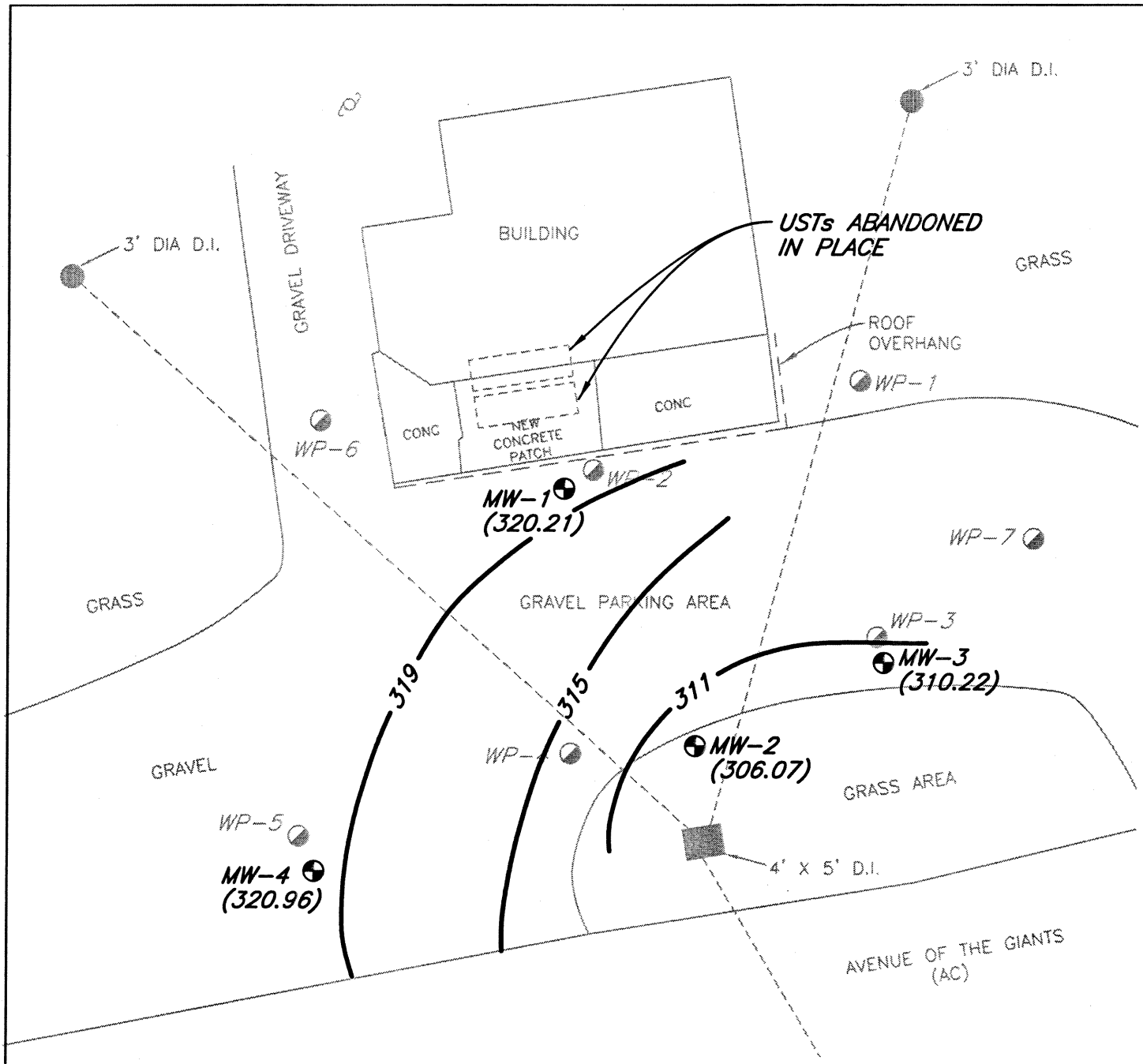
2.4 Investigation-Derived Waste Management

All rinse water utilized for decontaminating field sampling equipment and the well purge water was temporarily stored on site in 5-gallon buckets. The water was then transported to SHN's 1,000-gallon purge water storage tank located at 812 West Wabash Avenue in Eureka, California. Approximately 29 gallons of decontamination and purge water from the August 2, 2005, groundwater monitoring event are being stored at SHN, and will be discharged, under permit, to the City of Eureka municipal sewer system. A discharge receipt will be included in the next quarterly groundwater monitoring report.

3.0 Groundwater Monitoring Results

3.1 Hydrogeology

SHN measured depth-to-groundwater in the existing groundwater monitoring wells on August 2, 2005. The results are summarized in Table 1. During this monitoring event, the direction of groundwater flow beneath the site was to the southeast, with an estimated gradient of 0.36. A groundwater contour map for the August 2, 2005, monitoring event is presented as Figure 3. Historic groundwater elevation data are presented in Appendix A, Table A-3.



EXPLANATION

- WP-1 — SOIL BORING LOCATION AND DESIGNATION (SHN, NOVEMBER 2003)
- MW-1 — MONITORING WELL LOCATION AND DESIGNATION (SHN, NOVEMBER 2004)
- (320.21) — GROUNDWATER ELEVATION IN FEET (NAVD88)
- —311— GROUNDWATER CONTOUR IN FEET (NAVD88)

N

1"=20'

Consulting Engineers & Geologists, Inc.	Former Fir Haven Shell Miranda, California	Groundwater Contours August 2, 2005 SHN 001032
AUGUST 2005	001032-GWC-AUG-05	Figure 3

Table 1 Groundwater Elevations, August 2, 2005 Former Fir Haven Shell, Miranda, California			
Sample Location	**Top of Casing Elevation[1] (feet)**	**Depth to Water[2] (feet)**	**Groundwater Elevation (feet)**
MW-1	339.23	19.02	320.21
MW-2	338.77	32.70	306.07
MW-3	339.02	28.80	310.22
MW-4	340.11	19.15	320.96

1. Referenced to North American Vertical Datum (NAVD) 88
2. Below top of casing

3.2 Groundwater Analytical Results

The laboratory analytical results for the groundwater samples collected during the third quarter 2005, monitoring event are summarized in Table 2.

Table 2 Groundwater Analytical Results, August 2, 2005 Former Fir Haven Shell, Miranda, California (in ug/L)[1]						
Sample Location	**TPHG[2]**	**Benzene[3]**	**Toluene[3]**	**Ethylbenzene[3]**	**Total Xylenes[3]**	**MTBE[3]**
MW-1	**53,000[4]**	**3,100**	**6,500**	**1,500**	**8,500**	<300[5,6]
MW-2	<50	<0.50	<0.50	<0.50	<0.50	<3.0
MW-4	<50	<0.50	<0.50	<0.50	<0.50	<3.0

1. ug/L: micrograms per Liter
2. Total Petroleum Hydrocarbons as Gasoline (TPHG), analyzed in general accordance with U.S. Environmental Protection Agency (EPA) Method Nos. 5030/GCFID/8015B
3. Benzene, Toluene, Ethylbenzene, total Xylenes, and Methyl Tertiary-Butyl Ether (MTBE), analyzed in general accordance with EPA Method Nos. 5030/8021B
4. Sample appears to be similar to gasoline, but certain peak ratios are not that of a fresh gasoline standard. The reported result represents the amount of material in the gasoline range.
5. <: Denotes a value that is "less than" the laboratory method detection limit.
6. Reporting limit was raised due to matrix interference

TPHG was detected in the groundwater sample collected from well MW-1, at a concentration of 53,000 micrograms per Liter (ug/L). Detectable concentrations of BTEX components were also present in this sample. The groundwater samples collected from wells MW-2 and MW-4 did not contain any detectable concentrations of either TPHG or BTEX. MTBE was not detected in any of the groundwater samples collected during the third quarter 2005, monitoring event. Monitoring well MW-3 was dry, after purging, on August 2, 2005, and as such, could not be sampled.

The concentrations of TPHG, benzene, and MTBE in groundwater on August 2, 2005 are shown on Figure 4. The complete laboratory test results, Quality Assurance/Quality Control (QA/QC) data, and chain-of-custody documentation are included in Appendix C. Historic groundwater monitoring data are presented in Appendix A, Table A-4.

3.3 Natural Attenuation Monitoring

Natural attenuation parameters DO, DCO_2, and ORP were measured in all four groundwater monitoring wells on August 2, 2005, prior to sampling, and are summarized in Table 3. During this monitoring event, DO concentrations ranged from 1.15 parts per million (ppm) in well MW-1, to 2.95 ppm in well MW-3. These DO concentrations appear to be sufficient to support biodegradation. DCO_2 concentrations ranged from 20 ppm in well MW-2, to 120 ppm in well MW-1, and indicate that biodegradation may be occurring in the vicinity of MW-1. ORP measurements ranged from -84 millivolts (mV) in well MW-1, to 135 mV in well MW-3, and indicate that oxidizing conditions exist in site groundwater away from the source area and reducing conditions exist in the source area. Historic DO, DCO_2, and ORP measurements are presented in Appendix A, Table A-5.

Table 3
DO, DCO_2, and ORP Measurement Results, August 2, 2005
Former Fir Haven Shell, Miranda, California

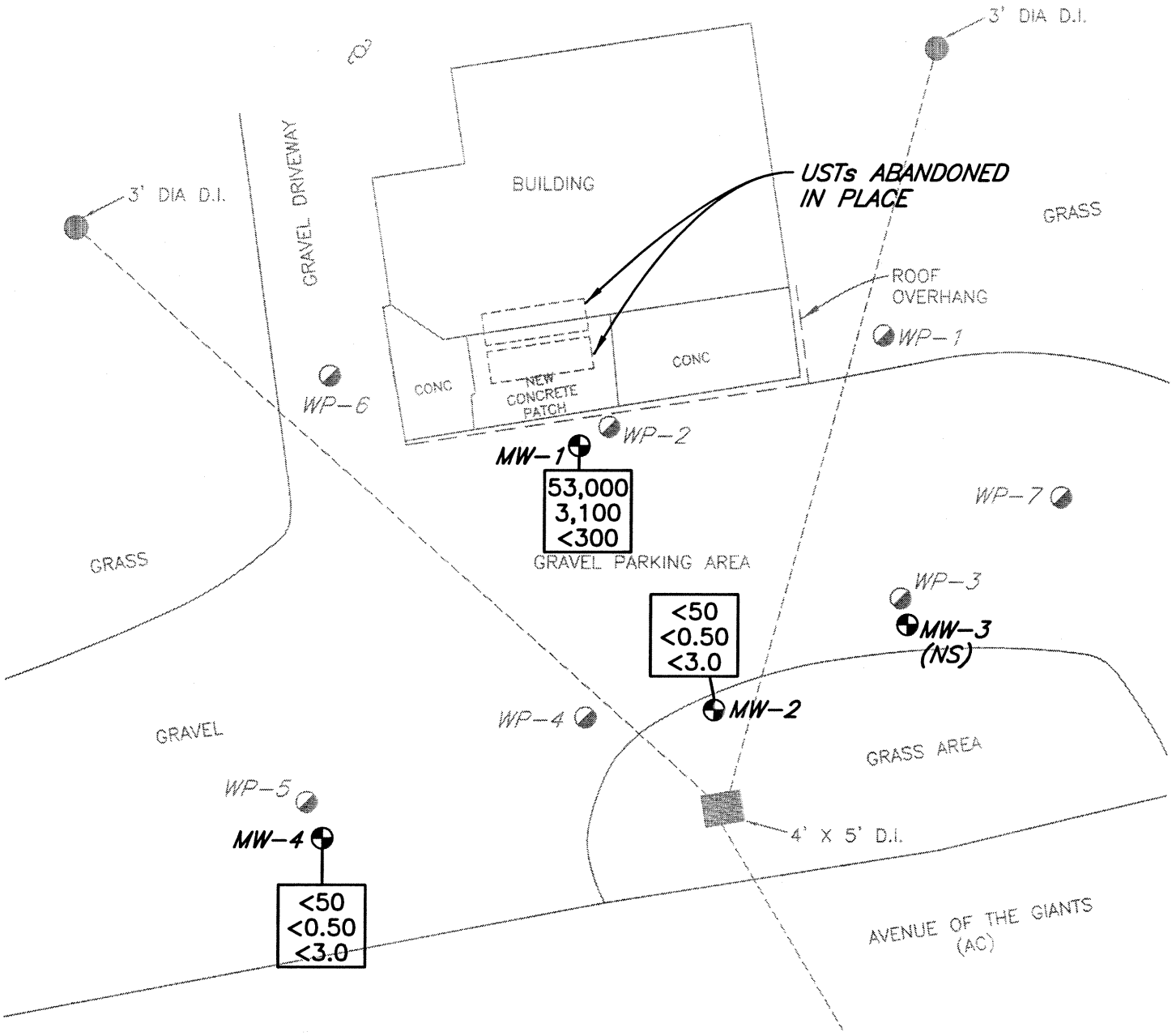
Sample Location	DO[1] (ppm)[2]	DCO_2[3] (ppm)	ORP[4] (mV)[5]
MW-1	1.15	120	-84
MW-2	1.77	20	128
MW-3	2.95	60	135
MW-4	1.26	40	131

1. DO: Dissolved Oxygen, field measured using portable instrumentation
2. ppm: parts per million
3. DCO_2: Dissolved Carbon Dioxide, field measured using a field test kit
4. ORP: Oxidation-Reduction Potential; filed measurement using portable instrumentation
5. mV: millivolts

4.0 Discussion and Recommendations

During the third quarter 2005, monitoring event, the groundwater sample collected from monitoring well MW-1 contained elevated concentrations of TPHG and BTEX components. The groundwater samples collected from wells MW-2 and MW-4 did not contain detectable concentrations of either TPHG or BTEX. MTBE was not detected in any of the groundwater samples that were collected during this monitoring event.

Based on the results of this and the previous three groundwater monitoring events, it does not appear that the petroleum hydrocarbon plume present in the source area is migrating. No petroleum hydrocarbon constituents have been detected in any groundwater samples collected from monitoring wells MW-2, MW-3, or MW-4. However, the continued elevated petroleum



EXPLANATION

WP-1 — SOIL BORING LOCATION AND DESIGNATION (SHN, NOVEMBER 2003)

MW-1 — MONITORING WELL LOCATION AND DESIGNATION (SHN, NOVEMBER 2004)

<50 TPHG
<0.50 BENZENE
<3.0 MTBE
> RESULTS IN ug/L

(NS) NOT SAMPLED

N

1"=20'

Consulting Engineers & Geologists, Inc.	Former Fir Haven Shell Miranda, California	Petroleum Hydrocarbon Concentrations in Groundwater, August 2, 2005 SHN 001032	
	AUGUST 2005	001032-PHC-AUG-05	Figure 4

hydrocarbon constituents found in groundwater samples collected from well MW-1 indicate that significant petroleum hydrocarbon contamination is present in the source area and warrants additional investigation.

SHN recommends that a workplan for additional site investigation in the source area be completed, to more accurately define the vertical and lateral extent of petroleum hydrocarbon contamination in soil and groundwater. Once approval is received from the HCDEH, SHN will proceed with preparation of the workplan. As required by the HCDEH, SHN will continue quarterly groundwater monitoring at the site. The next groundwater monitoring event is scheduled for November 2005.

5.0 References Cited

SHN Consulting Engineers & Geologists, Inc. (June 19, 2001). "Site Investigation Work Plan, Former Fir Haven Shell, 5251 Highway 254, Miranda, California, HCDEH LOP No. 12748." Eureka: SHN.

---. (June 19, 2001). "Monitoring Well Installation Work Plan, Former Fir Haven Shell, Miranda, California; Case No. 12748." Eureka: SHN.

---. (January 2004). *Well point Investigation Report of Findings, Former Fir Haven Shell, Miranda, California; Case No. 12748.* Eureka: SHN.

---. (January 2005). *Groundwater Monitoring Well Installation Report of Findings, Former Fir Haven Shell, Miranda, California; Case No. 12748.* Eureka: SHN.

Appendix A

Historic Data

Table A-1
Historic Soil Analytical Results
Former Fir Haven Shell, Miranda, California
(in ug/g)[1]

Sample Location	Sample Date	TPHG[2]	Benzene[3]	Toluene[3]	Ethyl-Benzene[3]	Total Xylenes[3]	m,p-Xylene[4]	o-Xylene[4]	MTBE[5]	Fuel Oxygenates[6]	Total Lead[7]
SP-1	3/29/01	**8,700**	**3.1**	**110**	**91**	**730**	NA[8]	NA	<0.20[9]	ND[10]	NA
SP-2	3/29/01	**3,000**	**0.77**	<20[11]	<3.0[11]	**308**	NA	NA	<5.0	NA	NA
SP-3	3/29/01	**2,500**	**5.4**	**67**	**9.4**	**295**	NA	NA	<5.0	NA	NA
SP-4	3/29/01	**760**	<0.50	**6.7**	**1.6**	**77**	NA	NA	<5.0	NA	NA
WP-1 @ 15-16'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	<10
WP-1 @ 23-24'	11/24/03	**120**[12]	<0.10[11]	<0.20[11]	<1.1[11]	NA	<0.40[11]	<1.0[11]	<1.0[11]	NA	<10
WP-2 @ 11-12'	11/24/03	<1.0[13]	<0.0050	<0.0050	<0.0050	NA	<0.010[14]	<0.0050	<0.050	NA	<10
WP-2 @23-24'	11/24/03	**59**[15]	**3.2**	**0.92**	**2.5**	NA	**4.4**	**1.4**	<1.0[11]	NA	<10
WP-3 @ 11-12'	11/24/03	<1.0	<0.0050	<0.020[11]	**0.0054**	NA	**0.019**	**0.0078**	<0.050	NA	<10
WP-3 @ 23-24'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.010[13]	<0.0050	<0.050	NA	<10
WP-4 @ 11-12'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.010[13]	<0.0050	<0.050	NA	**12**
WP-4 @ 21-22'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.010[13]	<0.0050	<0.050	NA	<10
WP-5 @ 11-12'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	**14**
WP-5 @ 18-19'	11/24/03	**1.8**[12]	<0.0050	<0.0050	<0.018[11]	NA	<0.0050	<0.0050	<0.050	NA	**17**
WP-6 @ 11-12'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.010[13]	<0.0050	<0.050	NA	<10
WP-6 @ 21-22'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.010[13]	<0.0050	<0.050	NA	<10
WP-7 @ 13-14'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	<10
WP-7 @ 25-26'	11/24/03	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	<10
MW-1 @ 11-11.5'	11/13/04	**7.0**[12, 15]	<0.0050	<0.050	<0.020	NA	<0.020	**0.042**	<0.050	NA	**13**
MW-1 @ 16-16.5'	11/13/04	**1**	**0.0089**	**0.023**	**0.011**	NA	**0.022**	**0.012**	<0.050	NA	**14**
MW-1 @ 21.5-23'	11/13/04	**5,600**[15]	**20**	**150**	**71**	NA	**290**	**120**	<40	NA	**18**
MW-2 @ 15.5-16'	11/12/04	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	**15**
MW-2 @ 26-26.5'	11/12/04	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	**18**
MW-3 @ 15.5-16'	11/12/04	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	**25**
MW-3 @ 25-25.5'	11/12/04	<1.0	<0.0050	<0.0050	<0.0050	NA	<0.0050	<0.0050	<0.050	NA	**14**

Table A-1
Historic Soil Analytical Results
Former Fir Haven Shell, Miranda, California
(in ug/g)[1]

Sample Location	Sample Date	TPHG[2]	Benzene[3]	Toluene[3]	Ethyl-Benzene[3]	Total Xylenes[3]	m,p-Xylene[4]	o-Xylene[4]	MTBE[5]	Fuel Oxygenates[6]	Total Lead[7]
MW-4 @ 17.5-18'	11/12/04	<1.0	<0.0050	**0.0077**	<0.0050	NA	**0.0091**	<0.0050	<0.050	NA	**14**
MW-4 @ 23.5-24'	11/12/04	<1.0	<0.0050	**0.0069**	<0.0050	NA	**0.0086**	**0.0066**	<0.050	NA	**10**

1. ug/g: micrograms per gram
2. TPHG: Total Petroleum Hydrocarbons as Gasoline, analyzed in general accordance with U.S. Environmental Protection Agency (EPA) Method Nos. 5030 or 8260B
3. Benzene, Toluene, Ethylbenzene, and Total Exylenes, analyzed in general accordance with EPA Method Nos. 8020 or 8260B
4. m,p-Xylene and o-Xylene, analyzed in general accordance with EPA Method Nos. 5035/8021B
5. MTBE: Methyl Tertiary-Butyl Ether, analyzed in general accordance with EPA Method Nos. 8020 or 8260B
6. Fuel Oxygenates: Diisopropyl Ether (DIPE), Ethyl Tertiary-Butyl Ether (ETBE), Teritary-Amyl Methyl Ether (TAME), Tertiary-Butyl Alcohol (TBA), methanol, and ethanol, analyzed in general accordance with EPA Method No. 8260B
7. Total Lead, analyzed in general accordance with EPA Method No. 6010B
8. NA: Not Analyzed
9. <: Denotes a value that is "less than" the laboratory method detection limit.
10. ND: Not Detected; fuel oxygeneates not detcted above their respective method reporting limits; see laboratory reports.
11. Method reporting limit was raised due to matrix interference.
12. Sample does not represent a peak pattern consistent with that of gasoline. The reported results represent the amount of material in the gasoline range.
13. Sample was reported as non-detectable due to matrix interference.
14. The reporting limit was raised due to an extracted interferant.
15. Sample appears to be similar to gasoline but certain peak ratios are not that of a fresh gasoline standard. The reported result represents the amount of material in the. gasoline range.

Table A-2
Historic Groundwater Analytical Results
Former Fir Haven Shell, Miranda, California
(in ug/L)

Sample Location	Sample Date	TPHG[2]	TPHD[3]	B[4]	T[4]	E[4]	X[4]	MTBE[4]
DW-1[5]	9/30/02	<50[6]	<50	<0.50	<0.50	<0.50	<0.50	<3.0
WP-1	11/24/03	**490**[7]	NA[8]	**5.3**	<5.0[9]	**9.3**	**6.2**	<3.0
WP-2	11/24/03	**2,700,000**[10]	NA	**15,000**	**72,000**	**100,000**	**660,000**	<30,000[9]

1. ug/L: micrograms per Liter
2. TPHG: Total Petroleum Hydrocarbons as Gasoline, analyzed in general accordance with U.S. Environmental Protection Agency (EPA) Method Nos. 3510/GCFID/8015B
3. TPHD: Total Petroleum Hydrocarbons as Diesel analyzed in general accordance with EPA Method No. 3510/GCFID
4. Benzene (B), Toluene (T), Ethylbenzene (E), total Xylenes (X), and Methyl Tertiary-Butyl Ether (MTBE), analyzed in general accordance with EPA Method Nos. 5030/8021B
5. Groundwater sample collected from a domestic well located on the site property. Sample collected by HCDEH personnel.
6. <: Denotes a value that is "less than" the method detection limit.
7. The gasoline value includes the reported gasoline components and additives in addition to other peaks in the gasoline range.
8. NA: Not Analyzed
9. Reporting limit was raised due to matrix interference.
10. Sample appears to be similar to gasoline but certain peak ratios are not of a fresh gasoline standard; the reported result represents the amount of material in the gasoline range.

Table A-3
Historic Groundwater Elevations
Former Fir Haven Shell, Miranda, California

Sample Location	Sample Date	Top of Casing Elevation (feet)[1]	Depth to Water[2] (feet)	Groundwater Elevation (feet)
MW-1	11/20/04	339.23	19.95	319.28
	1/21/05		18.13	321.10
	5/11/05		17.73	321.50
	8/2/05		19.02	320.21
MW-2	11/20/04	338.77	32.78	305.99
	1/21/05		29.55	309.22
	5/11/05		27.73	311.04
	8/2/05		32.70	306.07
MW-3	11/20/04	339.02	DRY[3]	--
	1/21/05		27.44	311.58
	5/11/05		26.70	312.32
	8/2/05		28.80	310.22
MW-4	11/20/04	340.11	22.68	317.43
	1/21/05		18.09	322.02
	5/11/05		16.82	323.29
	8/2/05		19.15	320.96

1. Referenced to North American Vertical Datum (NAVD) 88
2. Below top of casing
3. Well was dry on November 20, 2004. As such, a depth to water measurement could not be collected.

Table A-4
Historic Groundwater Monitoring Well Analytical Results
Former Fir Haven Shell, Miranda, California
(in ug/L)[1]

Sample Location	Sample Date	TPHG[2]	B[3]	T[3]	E[3]	X[3]	MTBE[3]
MW-1	11/20/04	**53,000**[4]	**4,300**	**5,900**	**1,600**	**8,600**	<600[5,6]
	1/21/05	**26,000**	**3,200**	**2,500**	**870**	**3,900**	<300[6]
	5/11/05	**35,000**[4]	**2,800**	**4,000**	**980**	**5,200**	<300[6]
	8/2/05	**53,000**[4]	**3,100**	**6,500**	**1,500**	**8,500**	<300[6]
MW-2	11/20/04	<50	<0.50	<0.50	<0.50	<0.50	<3.0
	1/21/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0
	5/11/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0
	8/2/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0
MW-3	11/20/04	NS[7]	NS	NS	NS	NS	NS
	1/21/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0
	5/11/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0
	8/2/05	NS	NS	NS	NS	NS	NS
MW-4	11/20/04	<50	<0.50	<0.50	<0.50	<0.50	<3.0
	1/21/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0
	5/11/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0
	8/2/05	<50	<0.50	<0.50	<0.50	<0.50	<3.0

1. ug/L: micrograms per Liter
2. TPHG: Total Petroleum Hydrocarbons as Gasoline, analyzed in general accordance with U.S. Environmental Protection Agency (EPA) Method Nos. 3510/GCFID/8015B or 5030/GCFID/8015B
3. Benzene (B), Toluene (T), Ethylbenzene (E), m,p-Xylene, o-Xylene, and Methyl Tertiary-Butyl Ether (MTBE), analyzed in general accordance with EPA Method Nos. 5030/8021B
4. Sample appears to be similar to gasoline, but certain peak ratios are not that of a fresh gasoline standard. The reported result represents the amount of material in the gasoline range.
5. <: Denotes a value that is "less than" the method detection limit.
6. Reporting limit raised due to matrix interference
7. NS: Not Sampled

Table A-5
Historic DO, DCO_2, and ORP Measurement Results
Former Fir Haven Shell, Miranda, California

Sample Location	Sample Date	DO[1] (ppm)[2]	DCO_2[3] (ppm)	ORP[4] (mV)[5]
MW-1	1/21/05	2.09	180	-67
	5/11/05	0.05	150	-90
	8/2/05	1.15	120	-84
MW-2	1/21/05	4.96	30	93
	5/11/05	4.00	30	208
	8/2/05	1.77	20	128
MW-3	1/21/05	5.26	60	116
	5/11/05	1.83	60	145
	8/2/05	2.95	60	135
MW-4	1/21/05	2.04	40	104
	5/11/05	0.05	40	175
	8/2/05	1.26	40	131

1. DO: Dissolved Oxygen, field measured using portable instrumentation
2. ppm: parts per million
3. DCO_2: Dissolved Carbon Dioxide, field measured using a field test kit
4. ORP: Oxidation-Reduction Potential; filed measurement using portable instrumentation.
5. mV: millivolts

Appendix B

Field Notes

CONSULTING ENGINEERS & GEOLOGISTS, INC.
480 Hemsted Drive • Redding, CA 96002• Tel: 530.221.5424 • FAX: 530.221.0135 •E-mail: shninfo@shn-redding.com
812 W. Wabash • Eureka, CA 95501 • Tel: 707.441.8855 • FAX: 707.441.8877 •E-mail: shninfo@shn-engr.com

DAILY FIELD REPORT

JOB NO 001032
Page 1 of 8

PROJECT NAME	CLIENT/OWNER	DAILY FIELD REPORT SEQUENCE NO
Former Fairhaven Shell	Eugene SKY	1
GENERAL LOCATION OF WORK	OWNER/CLIENT REPRESENTATIVE	DATE / DAY OF WEEK
Miranda, CA		8-2-05 / Tuesday
TYPE OF WORK	WEATHER	PROJECT ENGINEER/ SUPERVISOR
Quarterly sampling	Clear	Frans Lowman
SOURCE & DESCRIPTION OF FILL MATERIAL	KEY PERSONS CONTACTED	TECHNICIAN
		David R. Paine

DESCRIBE EQUIPMENT USED FOR HAULING, SPREADING, WATERING, CONDITIONING, & COMPACTING

0827	Arrived at site, Removed lids and caps on all 4 wells.
0918	I started taking water level Readings decoming the sounder after each well by scrubbing it with liquinox then rinsing it with DI water. ~~I started taking DO Readings~~
0950	I started purging mw-3 with a disposable bailer, purge water was caught in a graduated 1 gal. bucket, well went dry.
1004	I started purging mw-4 with a disposable bailer, purge water was caught in a graduated 3 gal. bucket.
1031	I started purging mw-2 with a disposable bailer, purge water was caught in a graduated 5 gal. bucket.
1140	I sampled mw-4 secured well with cap and lid, mw-3 had no Recharge so there was no sample, secured well with cap and lid.
1155	I sampled mw-2, secured well with cap and lid.
1158	I started purging mw-1 with a disposable bailer, purge water was caught in a graduated 3 gal. bucket.
1250	I sampled mw-1, secured well with cap and lid.
1255	OFF SITE
Note:	All decon water and purge water was caught in 5 gal. buckets with lids then transported to SHN's 1,000 gal. PWST located at 812 W. Wabash Avenue, Eureka, CA 29 gallons total.

COPY GIVEN TO:

REPORTED BY: David R. Paine

CONSULTING ENGINEERS & GEOLOGISTS, INC.
812 W. Wabash • Eureka, CA 95501-2138 • 707/441-8855 • FAX: 707/441-8877 •shninfo@shn-engr.com

Groundwater Elevations

Job No.: 001032 Name: David R. Paine

Client: EUGENE SKY Date: 8-2-05

Location: MIRANDA, CA Weather: Clear

Sample Location	Time of Reading	Top of Casing Elevation (feet)	Depth To Water (feet)	Water Surface Elevation (feet)
MW-1	0927	339.23	19.02	320.21
MW-2	0925	338.77	32.70	306.07
MW-3	0918	339.02	28.80	310.22
MW-4	0923	340.11	19.15	320.96

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EQUIPMENT CALIBRATION SHEET

Name: David R. Paine

Project Name: Former Fairhaven Shell

Reference No.: 001032

Date: 8-2-05

Equipment: ☒ pH & EC ☐ PID ☐ $GTCO_2$ ☐ GTLEL
☐ Turbidity ☒ Other Dissolved Oxygen Meter YSI95

Description of Calibration Procedure and Results:

pH & Ec meter is calibrated using a 2 buffer method with 7.01 and 4.01, the Ec (conductivity) is set at 1413 µS.

DO meter is self calibrating with the Altimeter set at 3.

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Water Sampling Data Sheet

Project Name: Former Fir Haven Shell
Date/Time: 8-2-05
Project No.: 001032
Sampler Name: David R. Paine
Location: Miranda, CA
Sample Type: Ground water
Well #: MW-1
Weather: Clear
Hydrocarbon Thickness/Depth (feet): NA
Key Needed: yes Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
30.05	-	19.02	=	11.03	x	0.163	=	1.80

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1158	1.15	120	-84				0.25 gal.	
1214	↓			457	60.9°	6.49	2 gal.	
1221	↓			470	62.1°	6.51	3.75 gal.	
1228	No Flow			469	61.7°	6.59	5.50 gal.	
	Then cell							
1250	Sample	Time						

Purge Method: Hand Bail
Total Volume Removed: 5.50 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-1	3-40ml VOA's	yes HCL	NCL	TPHG / BTEX / MTBE

Well Condition: Good
Remarks: Purge water has an odor
Recharged to 23.83 at sample time

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Water Sampling Data Sheet

Project Name: Former Fir Haven Shell
Date/Time: 8-2-05
Project No.: 001032
Sampler Name: David R. Paine
Location: Miranda, CA
Sample Type: Ground water
Well #: MW-2
Weather: Clear
Hydrocarbon Thickness/Depth (feet): NA
Key Needed: yes Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
50.17	-	32.70	=	17.47	x	0.163	=	2.85

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1031	1.77	20	128				0.25 gal.	
1044	↓			237	62.9°	6.50	3 gal.	
1053	↓			256	61.9°	6.61	6 gal.	
1103	No Flow			272	62.7°	6.59	9 gal.	
1115	Thru cell			296	62.4°	6.79	12 gal.	
1125				320	63.4°	6.76	15 gal.	
1155	Sample	Time						

Purge Method: Hand Bail
Total Volume Removed: 15.00 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-2	3-40ml VOA's	yes HCL	NCL	TPHG / BTEX / MTBE

Well Condition: Good
Remarks: Recharged to 37.53 at sample time

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Water Sampling Data Sheet

Project Name:	Former Fir Haven Shell	Date/Time:	8-2-05
Project No.:	001032	Sampler Name:	David R. Paine
Location:	Miranda, CA	Sample Type:	Ground water
Well #:	MW-3	Weather	Clear
Hydrocarbon Thickness/Depth (feet):	NA	Key Needed:	yes Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
29.35	-	28.80	=	0.55	x	0.163	=	0.09

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
0945	2.95	60	135				0.10 gal.	
0955	↓						0.10 gal.	Dry
1028	↓						0.10 gal.	Dry
1129	No Flow						0.10 gal.	Dry
	Then cell	No Sample						
	Sample	Time						

Purge Method: Hand Bail

Total Volume Removed: 0.10 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
~~MW-3~~	~~3-40ml VOA's~~	YES HCL	NCL	~~TPHG / BTEX / MTBE~~

Well Condition: Good

Remarks: No sample, no recharge
Recharged to at sample time

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Water Sampling Data Sheet

Project Name: Former Fir Haven Shell
Project No.: 001033
Location: Miranda, CA
Well #: MW-4
Hydrocarbon Thickness/Depth (feet): NA
Date/Time: 8-2-05
Sampler Name: David R. Paine
Sample Type: Ground water
Weather: Clear
Key Needed: yes Dolphin

Total Well Depth (feet)	-	Initial Depth to Water (feet)	=	Height of Water Column (feet)	x	0.163 gal/ft (2-inch well) / 0.653 gal/ft (4-inch well)	=	1 Casing Volume (gal)
29.32	-	19.15	=	10.17	x	0.163	=	1.66

Time	DO (ppm)	CO_2 (ppm)	ORP (mV)	EC (uS/cm)	Temp (°F)	pH	Water Removed (gal)	Comments
1004	1.26	40	131				0.25 gal.	
1013	↓			584	64.8°	7.00	1.75 gal.	
1018				588	64.1°	7.01	3.25 gal.	
1024	No Flow			588	64.3°	7.08	5 gal.	
	Then cell							
1140	Sample	Time						

Purge Method: Hand Bail
Total Volume Removed: 5.00 (gal)

Laboratory Information

Sample ID	# & Type of Containers	Preservative / Type	Laboratory	Analyses
MW-4	3-40ml VOA's	yes HCL	NCL	TPHG / BTEX / MTBE

Well Condition: Good
Remarks: Recharged to 22.47 at sample time

Appendix C

Laboratory Analytical Report

NORTH COAST
LABORATORIES LTD.

August 15, 2005

SHN Consulting Engineers and Geologists
812 West Wabash Avenue
Eureka, CA 95501

Attn: Frans Lowman

RE: 001032, Former Firhaven Shell

Order No.: 0508075
Invoice No.: 52055
PO No.:
ELAP No. 1247-Expires July 2006

SAMPLE IDENTIFICATION

Fraction	Client Sample Description
01A	MW-4
02A	MW-2
03A	MW-1

ND = Not Detected at the Reporting Limit

Limit = Reporting Limit

All solid results are expressed on a wet-weight basis unless otherwise noted.

REPORT CERTIFIED BY

Colleen Blackstone (for SD) T. Shea

Laboratory Supervisor(s) QA Unit

Jesse G. Chaney, Jr.
Laboratory Director

5680 West End Road • Arcata California 95521-9202 • 707-822-4649 • FAX 707-822-6831

North Coast Laboratories, Ltd. **Date:** *15-Aug-05*

CLIENT: SHN Consulting Engineers and Geologists
Project: 001032, Former Firhaven Shell
Lab Order: 0508075

CASE NARRATIVE

TPH as Gasoline:
Sample MW-1 appears to be similar to gasoline but certain peak ratios are not that of a fresh gasoline standard. The reported result represents the amount of material in the gasoline range.

BTEX:
Sample MW-1 was reported as ND with a dilution due to matrix interference.

The surrogate recovery for sample MW-2 was outside of the acceptance limits. The surrogate recoveries for the quality control samples were within acceptance limits. This indicates that the low surrogate recovery may be due to matrix effects from the sample.

NORTH COAST LABORATORIES
5680 West End Road • Arcata, California 95521-9202 • 707-822-4649 • FAX 707-822-6831

Date: 15-Aug-05
WorkOrder: 0508075

ANALYTICAL REPORT

Client Sample ID: MW-4 **Received:** 8/2/05 **Collected:** 8/2/05 11:40
Lab ID: 0508075-01A

Test Name: BTEX **Reference:** EPA 5030/EPA 8021B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
MTBE	ND	3.0	µg/L	1.0		8/11/05
Benzene	ND	0.50	µg/L	1.0		8/11/05
Toluene	ND	0.50	µg/L	1.0		8/11/05
Ethylbenzene	ND	0.50	µg/L	1.0		8/11/05
m,p-Xylene	ND	0.50	µg/L	1.0		8/11/05
o-Xylene	ND	0.50	µg/L	1.0		8/11/05
Surrogate: Cis-1,2-Dichloroethylene	88.8	85-115	% Rec	1.0		8/11/05

Test Name: TPH as Gasoline **Reference:** EPA 5030/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gas (C6-C14)	ND	50	µg/L	1.0		8/11/05

Client Sample ID: MW-2 **Received:** 8/2/05 **Collected:** 8/2/05 11:55
Lab ID: 0508075-02A

Test Name: BTEX **Reference:** EPA 5030/EPA 8021B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
MTBE	ND	3.0	µg/L	1.0		8/11/05
Benzene	ND	0.50	µg/L	1.0		8/11/05
Toluene	ND	0.50	µg/L	1.0		8/11/05
Ethylbenzene	ND	0.50	µg/L	1.0		8/11/05
m,p-Xylene	ND	0.50	µg/L	1.0		8/11/05
o-Xylene	ND	0.50	µg/L	1.0		8/11/05
Surrogate: Cis-1,2-Dichloroethylene	74.6	85-115	% Rec	1.0		8/11/05

Test Name: TPH as Gasoline **Reference:** EPA 5030/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gas (C6-C14)	ND	50	µg/L	1.0		8/11/05

Date: 15-Aug-05
WorkOrder: 0508075

ANALYTICAL REPORT

Client Sample ID: MW-1 **Received:** 8/2/05 **Collected:** 8/2/05 12:50
Lab ID: 0508075-03A

Test Name: BTEX **Reference:** EPA 5030/EPA 8021B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
MTBE	ND	300	µg/L	100		8/11/05
Benzene	3,100	500	µg/L	1,000		8/11/05
Toluene	6,500	500	µg/L	1,000		8/11/05
Ethylbenzene	1,500	500	µg/L	1,000		8/11/05
m,p-Xylene	6,000	500	µg/L	1,000		8/11/05
o-Xylene	2,500	500	µg/L	1,000		8/11/05
Surrogate: Cis-1,2-Dichloroethylene	88.8	85-115	% Rec	100		8/11/05

Test Name: TPH as Gasoline **Reference:** EPA 5030/GCFID(LUFT)/EPA 8015B

Parameter	Result	Limit	Units	DF	Extracted	Analyzed
TPHC Gas (C6-C14)	53,000	5,000	µg/L	100		8/11/05

North Coast Laboratories, Ltd.

Date: 15-Aug-05

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0508075
Project: 001032, Former Firhaven Shell

QC SUMMARY REPORT
Method Blank

Sample ID: **MB-8/10/05** Batch ID: **R36350** Test Code: **BTXEW** Units: **µg/L** Analysis Date: **8/10/05 10:58:58 PM** Prep Date:
Client ID: Run ID: **ORGC8_050810C** SeqNo: **522924**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	ND	3.0									
Benzene	ND	0.50									
Toluene	ND	0.50									
Ethylbenzene	ND	0.50									
m,p-Xylene	ND	0.50									
o-Xylene	ND	0.50									
Cis-1,2-Dichloroethylene	0.878	0.10	1.00	0	87.8%	85	115	0			

Sample ID: **MB-8/10/05** Batch ID: **R36349** Test Code: **TPHCGW** Units: **µg/L** Analysis Date: **8/10/05 10:58:58 PM** Prep Date:
Client ID: Run ID: **ORGC8_050810B** SeqNo: **522901**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)	ND	50									

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

North Coast Laboratories, Ltd.

Date: 15-Aug-05

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0508075
Project: 001032, Former Firhaven Shell

QC SUMMARY REPORT
Laboratory Control Spike

Sample ID: **LCS-05507** Batch ID: **R36350** Test Code: **BTXEW** Units: **µg/L** Analysis Date: **8/10/05 8:03:29 PM** Prep Date:
Client ID: Run ID: **ORGC8_050810C** SeqNo: **522922**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	38.06	3.0	40.0	0	95.2%	85	115	0			
Benzene	4.770	0.50	5.00	0	95.4%	85	115	0			
Toluene	4.871	0.50	5.00	0	97.4%	85	115	0			
Ethylbenzene	4.902	0.50	5.00	0	98.0%	85	115	0			
m,p-Xylene	9.598	0.50	10.0	0	96.0%	85	115	0			
o-Xylene	4.634	0.50	5.00	0	92.7%	85	115	0			
Cis-1,2-Dichloroethylene	0.901	0.10	1.00	0	90.1%	85	115	0			

Sample ID: **LCSD-05507** Batch ID: **R36350** Test Code: **BTXEW** Units: **µg/L** Analysis Date: **8/10/05 8:38:35 PM** Prep Date:
Client ID: Run ID: **ORGC8_050810C** SeqNo: **522923**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
MTBE	37.12	3.0	40.0	0	92.8%	85	115	38.1	2.50%	15	
Benzene	4.631	0.50	5.00	0	92.6%	85	115	4.77	2.96%	15	
Toluene	4.691	0.50	5.00	0	93.8%	85	115	4.87	3.76%	15	
Ethylbenzene	4.783	0.50	5.00	0	95.7%	85	115	4.90	2.46%	15	
m,p-Xylene	9.371	0.50	10.0	0	93.7%	85	115	9.60	2.39%	15	
o-Xylene	4.538	0.50	5.00	0	90.8%	85	115	4.63	2.08%	15	
Cis-1,2-Dichloroethylene	0.874	0.10	1.00	0	87.4%	85	115	0.901	3.07%	15	

Sample ID: **LCS-05508** Batch ID: **R36349** Test Code: **TPHCGW** Units: **µg/L** Analysis Date: **8/10/05 9:13:35 PM** Prep Date:
Client ID: Run ID: **ORGC8_050810B** SeqNo: **522899**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)	515.8	50	500	0	103%	81	126	0			

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

CLIENT: SHN Consulting Engineers and Geologists
Work Order: 0508075
Project: 001032, Former Firhaven Shell

QC SUMMARY REPORT
Laboratory Control Spike Duplicate

Sample ID: **LCSD-05508** Batch ID: **R36349** Test Code: **TPHCGW** Units: **µg/L** Analysis Date: **8/10/05 9:48:43 PM** Prep Date:
Client ID: Run ID: **ORGC8_050810B** SeqNo: **522900**

Analyte	Result	Limit	SPK value	SPK Ref Val	% Rec	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
TPHC Gas (C6-C14)	504.9	50	500	0	101%	81	126	516	2.14%	15	

Qualifiers:
ND - Not Detected at the Reporting Limit
J - Analyte detected below quantitation limits
S - Spike Recovery outside accepted recovery limits
R - RPD outside accepted recovery limits
B - Analyte detected in the associated Method Blank

NORTH COAST LABORATORIES LTD.
5680 West End Road • Arcata • CA 95521-9202
707-822-4649 Fax 707-822-6831

Chain of Custody

LABORATORY NUMBER: 0508075

Attention: Frans Lowman
Results & Invoice to: SHN
Address: 812 West Wabash Avenue
Eureka, CA 95501
Phone: 441-8855
Copies of Report to:
Sampler (Sign & Print): David R. Paine David R. Paine

TAT: ☐ 24 Hr ☐ 48 Hr ☐ 5 Day ☐ 5–7 Day
☒ STD (2–3 Wk) ☐ Other:
PRIOR AUTHORIZATION IS REQUIRED FOR RUSHES

REPORTING REQUIREMENTS: State Forms ☐
Preliminary: FAX ☐ Verbal ☐ By: __/__/__
Final Report: FAX ☐ Verbal ☐ By: __/__/__

CONTAINER CODES: 1—½ gal. pl; 2—250 ml pl; 3—500 ml pl; 4—1 L Nalgene; 5—250 ml BG; 6—500 ml BG; 7—1 L BG; 8—1 L cg; 9—40 ml VOA; 10—125 ml VOA; 11—4 oz glass jar; 12—8 oz glass jar; 13—brass tube; 14—other

PRESERVATIVE CODES: a—HNO_3; b—HCl; c—H_2SO_4; d—$Na_2S_2O_3$; e—NaOH; f—$C_2H_3O_2Cl$; g—other

PROJECT INFORMATION

Project Number: 001032
Project Name: Former Fairhaven Shell
Purchase Order Number:

LAB ID	SAMPLE ID	DATE	TIME	MATRIX*	CONTAINER	PRESERVATIVE	ANALYSIS: TPHG/BTEX/MTBE
	MW-4	8/2/05	1140	GW	9	b	X
	MW-2	"	1155	"	9	b	X
	MW-1	↓	1250	↓	9	b	X

SAMPLE CONDITION/SPECIAL INSTRUCTIONS

EDF

Global ID# T0602391110

RELINQUISHED BY (Sign & Print)	DATE/TIME	RECEIVED BY (Sign)	DATE/TIME
David R. Paine David R. Paine	8/2/05		8-2-05 1500

SAMPLE DISPOSAL
☒ NCL Disposal of Non-Contaminated
☐ Return ☐ Pickup

CHAIN OF CUSTODY SEALS Y/N/NA
SHIPPED VIA: UPS Air-Ex Fed-Ex Bus (Hand)

***MATRIX:** DW=Drinking Water; Eff=Effluent; Inf=Influent; SW=Surface Water; GW=Ground Water; S=Soil; O=Other.

ALL CONTAMINATED NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT